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Camille Hueni
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U.S. Environmental Protection Agency
1445 Ross Avenue, Suite 1200
Dallas, TX 75202-2733

AR/OK/TX BRANCH

(978) 371-1422 Phone
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**RE: Report of Findings 2003 Deep Monitoring Well Sampling and Analysis
South Cavalcade Superfund Site Houston, Texas**

Dear Ms. Hueni;

This report presents the results of the 2003 deep monitoring well groundwater sampling and analysis program conducted in accordance with the Record of Decision (ROD) and Environmental Protection Agency-approved Remedial Design Work Plan (RDWP) for the South Cavalcade Superfund Site located in Houston, Texas. The annual groundwater sampling event was conducted on December 10, 2003 in accordance with the procedures outlined in the Remedial Design Sampling and Analysis Plan and the Remedial Design Quality Assurance Plan.

The objective of the deep well sampling program is to determine if potentially carcinogenic polynuclear aromatic hydrocarbon (pcPAH) compounds are present above background concentrations in groundwater in the deep aquifers beneath the site. To meet the sampling program objective, two deep monitoring wells (well DW-02 [200 ft deep] and well LCW-01 [500 ft deep]) are sampled annually. However, due to an obstruction, the operator was not able to sample or measure the total depth of the deeper monitoring well (LCW-01).

The results of the field and laboratory analyses of groundwater sampled from DW-02 (Table 1 and Attachments 1 and 2) indicate pcPAH concentrations were less than method detection limits. As shown in Table 1, this data is consistent with the previous 10 years of data. Although the deep well could not be sampled, the results of the analysis of groundwater from the shallower well (DW-02) were below the detection limit. Therefore there is no indication of potential impact to the deep aquifer.

If you have questions, please feel free to call me at (770) 522-9300.

Sincerely,

The RETEC Group, Inc.

Rita Bauer
Groundwater Monitoring Program Manager

CK:th

Attachments

cc: Mike Bollinger, Beazer
Mike Slenska, Beazer
John Helton, RETEC

Jim Zubrow, Key Environmental
J. Gilman, RETEC
Mike Helbling, Beazer

9440247



TABLE 1
South Cavalcade
Analytical Summary 1993-2003
Annual Deep Well Groundwater Sampling
South Cavalcade, TX

Sample Location: Sample Date:		DW-02 March-93	LCW-01 March-93	DW-02 March-94	LCW-01 March-94	DW-02 March-95	LCW-01 March-95	DW-02 April-96	LCW-01 April-96	DW-02 March-97	DW-02 September-99	DW-02 March-00	DW-02 March-01	DW-02 December-02	DW-02 December-03
Method															
BENZO(A)PYRENE	UG/L	ND	ND	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.054 U	0.020 UJ	0.020 U	0.22 U	0.20 U	0.19 U
BENZO(A)ANTHRACENE	UG/L	ND	0.029	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.22 U	0.20 U	0.19 U
BENZO(B)FLUORANTHENE	UG/L	ND	0.037	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.053 U	0.020 UJ	0.020 U	0.22 U	0.20 U	0.19 U
BENZO(K)FLUORANTHENE	UG/L	ND	0.021	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.046 U	0.020 U	0.020 U	0.22 U	0.20 U	0.19 U
CHRYSENE	UG/L	ND	ND	0.150 U	0.150 U	0.150 U	0.150 U	0.150 U	0.2 U	0.150 U	0.15 U	0.15 U	2.2 U	0.20 U	0.19 U
DIBENZO(A,H)ANTHRACENE	UG/L	ND	ND	0.030 U	0.030 U	0.030 U	0.030 U	0.030 U	0.030 U	0.030 U	0.030 U	0.030 U	0.22 U	0.20 U	0.19 U
INDENO(1,2,3-CD)PYRENE	UG/L	ND	ND	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.22 U	0.20 U	0.19 U

Notes:

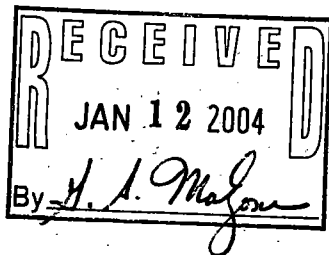
J indicates an estimated concentration

U indicates compound was analyzed for, but not detected.

ND indicates constituent not detected. Detection limits were not listed in the 1993 Annual Report.

In 1998, neither well LCW-01 nor well DW-02 were sampled.

Attachment 1
Analytical Data Package



SEVERN
TRENT

STL

STL Pittsburgh
450 William Pitt Way
Pittsburgh, PA 15238

Tel: 412 820 8380 Fax: 412 820 2080
www.stl-inc.com

ANALYTICAL REPORT

South Cavalcade, TX

Lot #: C3L110382

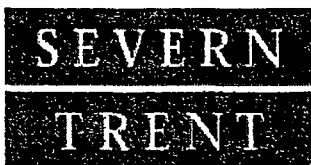
Gregory Malzone

The RETEC Group Inc

SEVERN TRENT LABORATORIES, INC.

Veronica Bortot
Project Manager

December 17, 2003



STL



NELAC REPORTING:

The format and content of the attached report meets NELAC standards and guidelines except as noted in the narrative. The table below presents a summary of the certifications held by STL Pittsburgh. Our primary accreditation authority for the Non-potable water and Solid & Hazardous waste programs is New York State DOH. A more detailed parameter list is available upon request. Please ask your project manager for this information when required.

Certifying State/Program	Certificate #	Program Types	STL Pittsburgh
NFESC	NA	NAVY	X
USACE	NA	Corps of Engineers	X
US Dept of Agriculture	(#S-46425)	Foreign Soil Import Permit	X
Arkansas	(#03-022-1)	WW	X
		HW	X
Connecticut	(#PH-0688)	WW	X
		HW	X
Florida - nelac	(#B37660)	WW	X
		HW	X
Illinois - nelac	(#200005)	WW	X
		HW	X
Kansas - nelac	(#E-10350)	WW	X
		HW	X
Louisiana - nelac	(#93200)	WW	X
		HW	X
New Hampshire - nelac	(#203002)	WW	X
		HW	X
New Jersey - nelac	(PA-005)	WW	X
		HW	X
New York - nelac	(#11182)	WW	X
		HW	X
North Carolina	(#434)	WW	X
		HW	X
Ohio - Vap	(#G10063)	WW	X
		HW	X
South Carolina	(#89014001)	WW	X
		HW	X
Utah - nelac	(STLP)	WW	X
		HW	X
West Virginia	(#142)	WW	X
		HW	X
Wisconsin	998027800	WW	X
		HW	X

The codes utilized for program types are described below:

- HW Hazardous Waste certification
- WW Non-potable Water and/or Wastewater certification
- X Laboratory has some form of certification under the specific program. Many states certify laboratories for specific parameters or tests within a category. The information in the table indicates the lab is certified in a general category of testing. Please contact the laboratory if parameter specific certification information is required.

CASE NARRATIVE

THE RETEC GROUP

SITE: South Cavalcade, TX

STL Lot #: C3L110382

Shipment:

Samples were received at STL Pittsburgh on December 11, 2003 in good condition. The coolers were received within the proper temperature range.

If project specific QC was not required for samples contained in this report, when batch QC was completed on these samples, anomalous results will be discussed below.

HPLC:

The reporting limits were adjusted due to the amount of sample used in the extraction procedure.

METHODS SUMMARY

C3L110382

<u>PARAMETER</u>	<u>ANALYTICAL METHOD</u>	<u>PREPARATION METHOD</u>
Polynuclear Aromatic Hydrocarbons by HPLC	SW846 8310	SW846 3510

References:

SW846 "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 and its updates.

SAMPLE SUMMARY

C3L110382

WO #	SAMPLE#	CLIENT SAMPLE ID	SAMPLED DATE	SAMP TIME
F6HJ6	001	DW-02	12/10/03	15:34
F6HKH	002	DW-02_FIELD_DUP	12/10/03	15:37
F6HKK	003	DW-02_FIELD_BLANK	12/10/03	15:38

NOTE(S) :

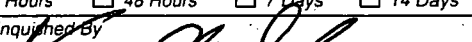

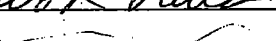
- The analytical results of the samples listed above are presented on the following pages.
- All calculations are performed before rounding to avoid round-off errors in calculated results.
- Results noted as "ND" were not detected at or above the stated limit.
- This report must not be reproduced, except in full, without the written approval of the laboratory.
- Results for the following parameters are never reported on a dry weight basis: color, corrosivity, density, flashpoint, ignitability, layers, odor, paint filter test, pH, porosity pressure, reactivity, redox potential, specific gravity, spot tests, solids, solubility, temperature, viscosity, and weight.

Severn Trent Laboratories, Inc.

STL-4124 (0901)

Client BEAZER - EAST / Refec		Project Manager John HEITON		Date		Chain of Custody Number 149650					
Address 3040 WILLIAM PITT WAY		Telephone Number (Area Code)/Fax Number 713-222-2710				Lab Number		Page _____ of _____			
City Pittsburgh		State PA	Zip Code 15238	Site Contact JEFF GILMAN		Lab Contact		Analysis (Attach list if more space is needed)			
Project Name and Location (State) SOUTH CALWAICANE HousFor TX				Carrier/Waybill Number		[TAS]					
Contract/Purchase Order/Quote No.				Containers							
Special Instructions/ Conditions of Receipt											

[illegible]

Possible Hazard Identification			Sample Disposal			(A fee may be assessed if samples are retained longer than 1 month)			
<input checked="" type="checkbox"/> Non-Hazard	<input type="checkbox"/> Flammable	<input type="checkbox"/> Skin Irritant	<input type="checkbox"/> Poison B	<input type="checkbox"/> Unknown	<input type="checkbox"/> Return To Client	<input type="checkbox"/> Disposal By Lab	<input type="checkbox"/> Archive For _____ Months		
Turn Around Time Required						QC Requirements (Specify)			
<input type="checkbox"/> 24 Hours	<input type="checkbox"/> 48 Hours	<input type="checkbox"/> 7 Days	<input type="checkbox"/> 14 Days	<input type="checkbox"/> 21 Days	<input type="checkbox"/> Other _____				
1. Relinquished By 			Date	Time	1. Received By			Date	Time
			12/20/03	1630	2. Received By 			Date	Time
2. Relinquished By			Date	Time	2. Received By			Date	Time
					3. Received By 			12/14/03	1800
3. Relinquished By			Date	Time	3. Received By			Date	Time

Comments

THE RETEC GROUP INC

Client Sample ID: DW-02

HPLC

Lot-Sample #....: C3L110382-001
 Date Sampled....: 12/10/03
 Prep Date.....: 12/12/03
 Prep Batch #....: 3346600
 Dilution Factor: 0.95

Work Order #....: F6HJ61AA
 Date Received...: 12/11/03
 Analysis Date...: 12/15/03
 Analysis Time...: 12:14

Matrix.....: WATER
 MS Run #.....: 3346304

Method.....: SW846 8310

PARAMETER	RESULT	REPORTING	
		LIMIT	UNITS
Benzo (a) anthracene	ND	0.19	ug/L
Benzo (b) fluoranthene	ND	0.19	ug/L
Benzo (k) fluoranthene	ND	0.19	ug/L
Benzo (a) pyrene	ND	0.19	ug/L
Chrysene	ND	0.19	ug/L
Dibenzo (a, h) anthracene	ND	0.19	ug/L
Indeno (1, 2, 3-cd) pyrene	ND	0.19	ug/L
SURROGATE	PERCENT	RECOVERY	
	RECOVERY	LIMITS	
Benzo (e) pyrene	94	(71 - 131)	
Terphenyl-d14	92	(75 - 138)	

THE RETEC GROUP INC

Client Sample ID: DW-02_FIELD_DUP

HPLC

Lot-Sample #....: C3L110382-002 Work Order #....: F6HKH1AA Matrix.....: WATER
 Date Sampled....: 12/10/03 Date Received...: 12/11/03 MS Run #.....: 3346304
 Prep Date.....: 12/12/03 Analysis Date...: 12/15/03
 Prep Batch #....: 3346600 Analysis Time...: 14:14
 Dilution Factor: 0.95
 Method.....: SW846 8310

PARAMETER	RESULT	REPORTING	
		LIMIT	UNITS
Benzo(a)anthracene	ND	0.19	ug/L
Benzo(b)fluoranthene	ND	0.19	ug/L
Benzo(k)fluoranthene	ND	0.19	ug/L
Benzo(a)pyrene	ND	0.19	ug/L
Chrysene	ND	0.19	ug/L
Dibenzo(a,h)anthracene	ND	0.19	ug/L
Indeno(1,2,3-cd)pyrene	ND	0.19	ug/L
SURROGATE	PERCENT RECOVERY	RECOVERY	
		LIMITS	
Benzo(e)pyrene	98	(71 - 131)	
Terphenyl-d14	96	(75 - 138)	

THE RETEC GROUP INC

Client Sample ID: DW-02_FIELD_BLANK

HPLC

Lot-Sample #....: C3L110382-003 Work Order #....: F6HKK1AA Matrix.....: WATER
 Date Sampled....: 12/10/03 Date Received...: 12/11/03 MS Run #.....: 3346304
 Prep Date.....: 12/12/03 Analysis Date...: 12/15/03
 Prep Batch #....: 3346600 Analysis Time...: 14:54
 Dilution Factor: 0.96
 Method.....: SW846 8310

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING</u> <u>LIMIT</u>	<u>UNITS</u>
Benzo(a)anthracene	ND	0.19	ug/L
Benzo(b)fluoranthene	ND	0.19	ug/L
Benzo(k)fluoranthene	ND	0.19	ug/L
Benzo(a)pyrene	ND	0.19	ug/L
Chrysene	ND	0.19	ug/L
Dibenzo(a,h)anthracene	ND	0.19	ug/L
Indeno(1,2,3-cd)pyrene	ND	0.19	ug/L
	<u>PERCENT</u> <u>RECOVERY</u>	<u>RECOVERY</u> <u>LIMITS</u>	
<u>SURROGATE</u>			
Benzo(e)pyrene	95	(71 - 131)	
Terphenyl-d14	95	(75 - 138)	

METHOD BLANK REPORT

HPLC

Client Lot #....: C3L110382
 MB Lot-Sample #: C3L120000-600

Work Order #....: F6LXA1AA

Matrix.....: WATER

Analysis Date...: 12/15/03
 Dilution Factor: 1

Prep Date.....: 12/12/03

Analysis Time...: 16:14

Prep Batch #....: 3346600

PARAMETER	RESULT	REPORTING		
		LIMIT	UNITS	METHOD
Benzo (a) anthracene	ND	0.20	ug/L	SW846 8310
Benzo (b) fluoranthene	ND	0.20	ug/L	SW846 8310
Benzo (k) fluoranthene	ND	0.20	ug/L	SW846 8310
Benzo (a) pyrene	ND	0.20	ug/L	SW846 8310
Chrysene	ND	0.20	ug/L	SW846 8310
Indeno (1,2,3-cd) pyrene	ND	0.20	ug/L	SW846 8310
Dibenzo (a,h) anthracene	ND	0.20	ug/L	SW846 8310
SURROGATE	PERCENT	RECOVERY		
	RECOVERY	LIMITS		
Benzo (e) pyrene	93	(71 - 131)		
Terphenyl-d14	92	(75 - 138)		

NOTE(S) :

Calculations are performed before rounding to avoid round-off errors in calculated results.

LABORATORY CONTROL SAMPLE EVALUATION REPORT

HPLC

Client Lot #....: C3L110382 Work Order #....: F6LXA1AC Matrix.....: WATER
LCS Lot-Sample#: C3L120000-600
Prep Date.....: 12/12/03 Analysis Date...: 12/15/03
Prep Batch #....: 3346600 Analysis Time...: 23:35
Dilution Factor: 1

<u>PARAMETER</u>	<u>PERCENT RECOVERY</u>	<u>RECOVERY LIMITS</u>	<u>METHOD</u>
Benzo(a)pyrene	102	(62 - 120)	SW846 8310
Chrysene	91	(67 - 129)	SW846 8310
Indeno(1,2,3-cd)pyrene	98	(71 - 124)	SW846 8310

<u>SURROGATE</u>	<u>PERCENT RECOVERY</u>	<u>RECOVERY LIMITS</u>
Benzo(e)pyrene	93	(78 - 125)
Terphenyl-d14	92	(76 - 130)

NOTE(S) :

Calculations are performed before rounding to avoid round-off errors in calculated results.

Bold print denotes control parameters

MATRIX SPIKE SAMPLE EVALUATION REPORT

HPLC

Client Lot #....: C3L110382 Work Order #....: F6HJ61AC-MS Matrix.....: WATER
 MS Lot-Sample #: C3L110382-001 F6HJ61AD-MSD
 Date Sampled....: 12/10/03 Date Received...: 12/11/03 MS Run #.....: 3346304
 Prep Date.....: 12/12/03 Analysis Date...: 12/15/03
 Prep Batch #....: 3346600 Analysis Time...: 12:54
 Dilution Factor: 0.95

<u>PARAMETER</u>	<u>PERCENT RECOVERY</u>	<u>RECOVERY LIMITS</u>	<u>RPD</u>	<u>RPD LIMITS</u>	<u>METHOD</u>
Benzo(a)pyrene	97	(60 - 120)			SW846 8310
	98	(60 - 120)	1.3	(0-25)	SW846 8310
Chrysene	90	(67 - 130)			SW846 8310
	89	(67 - 130)	0.18	(0-25)	SW846 8310
Indeno(1,2,3-cd)pyrene	95	(52 - 128)			SW846 8310
	96	(52 - 128)	0.79	(0-25)	SW846 8310

<u>SURROGATE</u>	<u>PERCENT RECOVERY</u>	<u>RECOVERY LIMITS</u>
Benzo(e)pyrene	91	(71 - 131)
	92	(71 - 131)
Terphenyl-d14	90	(75 - 138)
	91	(75 - 138)

NOTE(S) :

Calculations are performed before rounding to avoid round-off errors in calculated results.

Bold print denotes control parameters

Attachment 2
Groundwater Sampling Report Form

